

Boulder Bridge  
Beach Drive spanning Rock Creek 1.5 miles  
south of Joyce Road, NW  
Rock Creek Park  
Washington  
District of Columbia

HAER No. DC-12

HAER  
DC,  
WASH.,  
564 -

PHOTOGRAPHS  
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
National Park Service  
Department of the Interior  
Washington, DC 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

BOULDER BRIDGE

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Location: Beach Drive 1.5 miles south of Joyce Road, spanning  
Rock Creek, Rock Creek Park, Washington D.C.

UTM: 18/322760/4312775  
Quad: Washington West

Date of Construction: 1901-1902

Engineer: John Watkinson Douglas  
Designer: Lansing H. Beach  
Contractor: Talty and Allen

Present Owner: Rock Creek Park  
National Capital Region  
National Park Service  
Department of the Interior

Present Use: Vehicular bridge

Significance: Boulder bridge is one of the earliest extant bridges  
in Rock Creek Park. Constructed in 1902, the bridge  
exemplifies the idea of rustic architecture in the  
early twentieth century National Parks. It is a Melan  
reinforced concrete arch bridge with a unique boulder  
facing. The boulder facing blends into the bridge's  
surroundings, creating a structure that is both  
functional and aesthetically complimentary to the  
natural setting. Also, the length of the span and the  
size of the boulders make it unique even among other  
stone-faced bridges.

Historian: Marcia M. Miller, 1988

Located in the center of Rock Creek Park, Boulder Bridge exemplifies early rustic architecture and its attempt to harmonize with the surroundings. Constructed in 1902, the bridge was faced with rounded boulders similar to those found in the creek bed. As such, it is one of the first bridges in the Park built as both a functional and aesthetically pleasing structure.

After many years of proposals, Rock Creek Park was created by an Act passed by Congress on September 27, 1890. Containing appropriations to purchase 1605.9 acres of land running along Rock Creek from the Maryland border to the Zoological Park to be preserved as a natural park, the act defined the purpose of the park as providing "for the preservation from injury or spoliation of all timber, animals, or curiosities within said park, and their retention in their natural condition as nearly as possible."<sup>1</sup> At the time, the United States government had designated only two other such areas as natural parks.<sup>2</sup> The Commissioners of the District of Columbia and Chief of Engineers of the United States Army jointly controlled the park (although at this time the military exercised more authority). Their duty was to lay out paths and roads for public use. After purchasing the land, however, Congress did not provide for any improvements to the park for the next seven years.

Since Congress did not appropriate money for work within the park, chain gangs (comprised of District prisoners) constructed the improvements to paths and roads. In 1898, Congress finally approved funding to create a road running the length of the park. Beach Drive followed the natural course of the path along the creek.<sup>3</sup> This became, and remains today, the main thoroughfare through the park. Although the road crossed the creek in many places, only four bridges were constructed between 1898 and 1900. Fords provided adequate crossings in some areas, but the Board of Control of Rock Creek Park realized the necessity of building more bridges along Beach Drive.

Boulder Bridge is one of two bridges designed and constructed along Beach Drive between 1901 and 1902. Col. Lansing H. Beach, Secretary of the Board of Control of Rock Creek Park, suggested that a bridge made from natural boulders would blend well with the creek and wooded setting of the park. His

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<sup>1</sup>Mackintosh, Barry. Rock Creek Park An Administrative History. History Division, National Park Service, Department of the Interior, Washington, D.C. 1985, p. 17.

<sup>2</sup>ibid. Yellowstone and Sequoia National Parks were the first to be designated as such.

<sup>3</sup>Beach Drive is named in honor of Col. Lansing H. Beach, Army Corps of Engineers, U.S. Army who served as Secretary of the Board of Control of Rock Creek Park and later as the Bridge Commissioner for the District of Columbia. He is responsible for the early improvements to Rock Creek Park.

design was accepted by W.J. Douglas, District Bridge Commissioner.<sup>4</sup> (One report lists John Biddle, Corps of Engineers and Engineer Commissioner and his assistant Capt. H. C. Newcomer, as the supervisors of the project). Talty and Allen of Washington, D.C. received the contract. However, the prohibitive cost factor, in addition to construction challenges, did not allow for a bridge to be constructed completely from boulders. Therefore, a concrete steel arch bridge would be built with a facing of large, worn boulders. The structure is a Melan type arch in which ribs of rolled I beams are used to strengthen the concrete arch barrel.<sup>5</sup> The bridge is one segmental arch with an eighty foot span and a rise of twelve feet. The length of the bridge is 130 feet, the width is twenty-seven feet and the distance between the parapets is twenty-three feet.

The specifications, prepared under Douglas' supervision, stated precisely the materials to be used and the size and shape of the boulders:

The term boulder stones here is meant to cover loose rock which shall be hard, sound, durable and of a quality to be approved by the Engineer, whose edges have become weathered or water-worn, or both, and are more or less rounded. It is the intention to obtain a decidedly rustic effect on the facing, and to that end extreme care must be taken in the selection of the stones, and only mechanics who show an aptitude for this class of work shall be employed.<sup>6</sup>

Gathered outside of the Park, the boulders had to be hauled from four to six miles. Although the specifications gave the size and location of the boulders to be used, the contractors located them elsewhere at a cheaper price.<sup>7</sup> The

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<sup>4</sup>Although all written accounts used in this report list W.J. Douglas as the District Bridge Engineer and designer of this bridge, the District of Columbia Board of Commissioners list his name as John Watkinson Douglas (D.C. Current Book, Martin Luther King Library, Washingtoniana Room).

<sup>5</sup>Waddell, J.A.L. Bridge Engineering v. II. New York: John Wiley and Sons, Inc., 1916, p. 1897.

<sup>6</sup>Douglas, W.J., "Boulder-Faced Concrete-Steel Arch Bridge over Rock Creek, National Park, Washington, D.C." Engineering News 14 August 1902, p. 109.

<sup>7</sup>Zack Spratt, in his article "Rock Creek's Bridges," relates the well-known anecdote concerning man-sized boulders. As the story goes, the contract called for "man-sized" stone meaning a stone easily handled by the stone mason. The contractor took the words literally and found actual life-sized boulders. As it was several weeks before Lansing Beach was able to observe the construction progress, the work was already well advanced. It was decided not to change the large stones because of the time requirements and also it was believed the larger stones made an "attractive picture." (Spratt, Zack, "Rock Creek's Bridges," Columbia Historical Society Records v. 53-56, (1955-56); p. 109)

depth of each boulder measured between three and four feet, with a width between eighteen and thirty-six inches, and the length alternately between eighteen and twenty-four inches (measured exclusive of the projections beyond neat lines).<sup>8</sup> The boulders used on the arch as voussoirs were much larger and very carefully selected. The parapet stones, larger, well rounded boulders, reached through the entire length of the wall. Only two masons were hired to complete the facing so that the work would be consistent across the entire bridge. These masons chose boulders only if no fractures or holes were evident on their face. When applied, the boulders underwent careful scraping and brushing so no mortar or tool marks would show. After the stones were clamped to the steel girder by wrought iron clamps reaching two inches into each boulder, the stones were then cemented in. Wire cables were wrapped around the two outside girders and twisted until all the slack had been taken up. This was done just before encasing the girders in concrete. Mr. O. Strange designed the "centering" (wooden falsework) for the contractor, making it exceptionally strong and solid because of the frequent winter and spring freshets occurring in Rock Creek at the time of construction.<sup>9</sup>

The bridge cost \$17,635.77 to build. The firm of Talty and Allen were awarded the contract to complete the bridge for \$14,890. The patented Melan arch design required a royalty payment of \$1190.77. The girders, provided by the District of Columbia, cost \$987 and the inspection cost \$568.<sup>10</sup> The stones varied in price from twelve dollars per cubic yard for the spandrel walls to twenty-two dollars per cubic yard for the parapet. Talty and Allen constructed the bridge between October, 1901 and June, 1902. The only criticism of the completed structure was that a portion of the cement soffit could be seen thus showing that the bridge was not entirely stone. To hide this, the soffit was darkened with lamp black.<sup>11</sup> Mainly, the structure received high praise and is recognized throughout the country as an exceptional example of bridgework.

In the early twentieth century, the National Park Service believed in creating "rustic architecture"--structures and buildings that were in harmony with the rugged nature prevalent in the new parks.<sup>12</sup> Even though concrete did not blend well with the natural scene, stone structures were not always economically or structurally feasible. The most frequent solution was thus to build a concrete and stone arch bridge. Boulder Bridge took this solution one

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<sup>8</sup>Douglas, W.J., p. 109.

<sup>9</sup>ibid., p. 110.

<sup>10</sup>Rock Creek Park Board of Control Report 1890-1912, p. 13.

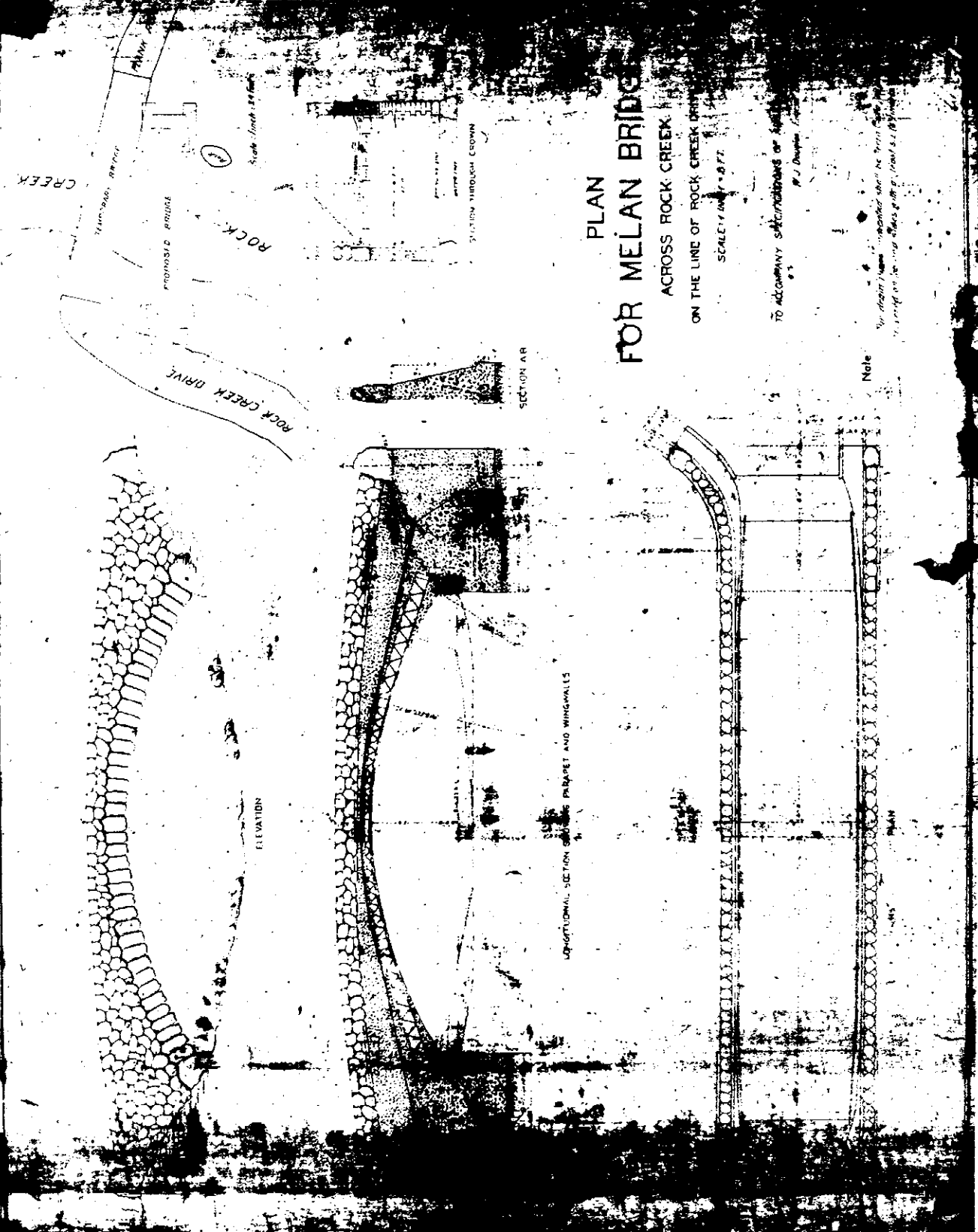
<sup>11</sup>Douglas, W.J., p. 110.

<sup>12</sup>1977, Tweed, William C., Laura E. Soullierie, and Henry G. Law. National Park Service Rustic Architecture: 1916-1942. National Park Service, Western Regional Office Division of Cultural Resource Management. February 1977, p. i.

step further by using the boulders typical in appearance of the creek. The bridge thus blends exceptionally well with the natural scenery in the park. Rock Creek was aptly named for its huge, rounded boulders and such a bridge holds a high degree of kinship to the creek and its environs. The relationship between the two complies with the attempt to create a structure that will enhance the surroundings. As one of the earliest extant bridges in Rock Creek Park, Boulder Bridge represents a triumphant combination of aesthetics and function. The appearance of the bridge is such that one is led to believe its only purpose is to be aesthetically pleasing. The McIan arch, a significant engineering achievement, is completely hidden underneath the boulder facing. The size of the boulders and the care taken to hide the tool or engineering marks also makes it unique among other "boulder" bridges.<sup>13</sup> The bridge was listed in the National Register of Historic Places, along with another Rock Creek structure, the Ross Drive Bridge (See HAER No. DC-13), in 1979.

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<sup>13</sup>Douglas, W.J., p. 109.



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ADDENDUM TO  
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